CAPACITORS

RELIABILITY

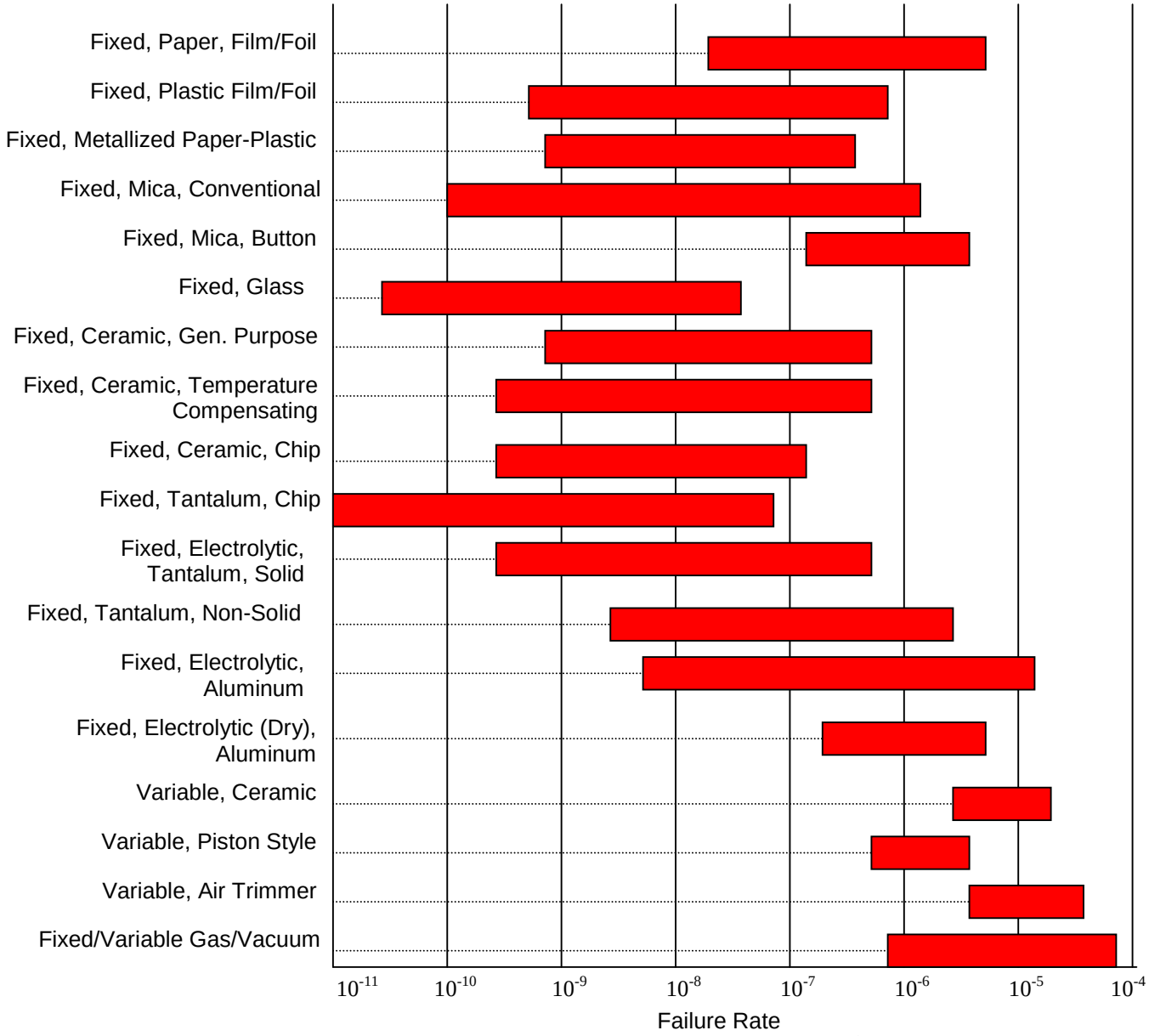

Figure 1. Relative Failure Rates for Capacitors[3]

[3] Relative failure rates based on the failure rate models contained in MIL-HDBK-217. Maximum failure rate value assumes a commercial, unknown quality level and highest capacitor value of a given style. Minimum failure rate values assume a quality level of R and the lowest capacitor value of a given style. Identical environment, ambient temperature, and stress levels used for both.

Capacitor failure rates vary considerably with style and value. Variations are shown in Figure 1 for each capacitor style addressed in this section. Even within the same style, capacitors have a wide variation in failure rate. Large value capacitors will often be less reliable due to the increased physical size, larger anode/cathode surface area, and the increased amount of dielectric material. Glass-style capacitors are considered the most reliable, followed closely by ceramic. Variable capacitors are considerably less reliable and should not be used in high reliability applications. If it is necessary to compensate for temperature-capacitance effects, the preferred method is to use capacitors of more than one style and take advantage of property differences rather than using a variable capacitor.